REMARKS

Claims 1-3 are pending in the application. The Examiner has rejected Claims 1 and 2 under 35 U.S.C. §103(a) as being unpatentable over Raythonyi et al. (U.S. Patent 6,772,215) in view of William Stallings, *Data And Computer Communications*, second edition, Macmillan Publishing Company, pages 141-144 (Stallings). The Examiner has rejected Claim 3 under 35 U.S.C. §103(a) as being unpatentable over Raythonyi et al. in view of Stallings, and further in view of Seo (U.S. Patent 6,581,176).

A brief description of the processes and systems in the present application are provided to assist in the understanding of the present invention. In the present application, a transmitter transmits a plurality of RLP frames and sequence numbers, i.e. a frame sequence number and data sequence number are assigned to each of the transmitted frames. A receiver then receives frames transmitted from the transmitter and stores the sequence numbers of frames that are not received from the transmitter. The receiver transmits to the transmitter a retransmission request frame including fields that indicate the sequence numbers of non-received frames. The transmitter replies to the retransmission request frame and retransmits in the order of the sequence numbers the corresponding frames. A sequence number is also assigned to each of the retransmitted frames. The receiver receives the retransmitted frames in the order of their sequence numbers from the RLP frame, and compares the stored sequence numbers with those of the received frames. If it is determined by the comparison that one RLP frame is again not received, the RLP frame receiver transmits a NAK frame including a field that provides the sequence number of the non-received RLP frame to the RLP frame transmitter.

Regarding the rejections of Claim 1 and 2, the Examiner states that Raythonyi et al. in view of Stallings discloses all of the elements of the claims. Raythonyi et al. teaches a method for minimizing feedback responses in ARQ protocols; Stallings teaches ARQ error control. Regarding the rejection of Claim 3, the Examiner states that Raythonyi et al. in view of Stallings, and further in view of Seo discloses all of the elements of the claim. In addition to Raythonyi et al. and Stallings, Seo discloses a method for transmitting control frames and user data frames in a mobile communication system.

Turning now to Raythonyi et al., and referring to col. 1, line 20 - col. 2, line 21, disclosed is a general explanation of the ARQ. According to Raythonyi et al., a protocol data unit (PDU)

and a sequence number is included in a frame to be transmitted. In Raythonyi et al., upon the transmitting of data from a transmitter to a receiver, if there is no an error in the PDU, the receiver transmits an ACK to the transmitter, and if there is an error in the PDU, the receiver transmits a NAK to the transmitter. Raythonyi et al. merely discloses the retransmission of the frame in which an error occurs. Raythonyi et al. fails to disclose a system and method of a retransmission request queue that transmits a retransmission frame of the lowest sequence number after arranging retransmission frames in the order of their sequence numbers, as presented in the claims of the present application. That is, when the NAK is generated, in Raythonyi et al., the retransmission frame is immediately transmitted, while in the claims of the present application, the retransmission frame is transmitted in the order of the sequence numbers after storing the frame in a forward resequencing buffer. According to the claims of the present application, the retransmission request queue stores the retransmission frame generated upon a request for a retransmission from the RLP frame receiver; the retransmission frame is stored along with its sequence number. The retransmission request queue functions to arrange stored retransmission frames in the order of their sequence numbers.

In view of the above points, the claims of the present application are clearly distinguishable from Raythonyi et al.

The Examiner cites Stallings as curing the defects of Raythonyi et al. Stallings discloses a stop-and-wait ARQ, Go-back-N ARQ, and a selective repeat ARQ, each of which is distinguishable from the claims of the preset application.

Stop-and-wait ARQ

In the stop-and-wait ARQ a sending station transmits a single frame and then must await acknowledgment. No other data frames can be sent until the reply from the receiving station arrives at the transmitting station. If a damaged frame arrives at a destination, a receiver removes a corresponding frame when the error occurs; the sender is equipped with a timer, and after a frame is transmitted, the sender waits for an acknowledgment (ACK or NAK); if no recognizable acknowledgment is received by the time that the timer expires, then the same frame is sent again. Accordingly, this system requires that the transmitter maintain a copy of a transmitted frame until an ACK is received for that frame.

Go-back-N ARQ

In the go-back-N ARQ a series of frames that is continuously numbered is transmitted. The number is determined by a modulo scheme. The number of the frame that can be transmitted without an acknowledgement is determined by a window size that is used in sliding window flow control technique. When an error does not occur, a receiving station transmits an ACK for the received frame. When the receiving station detects an error, the receiving station transmits an NAK for the frame that contains the error. The receiving station discards all of the corresponding frame and future incoming frames. Thus, when the transmitting station receives a NAK, the transmitting station must retransmit the frame in which the error occurs, as well as all frames proceeding thereafter.

Selective repeat ARQ

The selective repeat ARQ is a method in which the receiving station confirms normally received frames. The transmitting station recognizes that a frame is not transmitted normally by the order of an ACK frame. If the receiving station detects an error, the receiving station transmits a NAK for the frame including the error. When using the selective repeat ARQ, the receiving station stores in a buffer all of the frames after a corresponding frame.

Stallings merely discloses the retransmitting of a NAK frame including the sequence number of a lost frame, and then storing all of the frames after the lost frame in the buffer. Stallings fails to disclose the system and method of the present application presenting the retransmission request queue in which the retransmission frames are arranged in the order of their sequence numbers, and the retransmission frame having the lowest sequence number is initially transmitted, since a priority order is determined by the order of the sequence number of RLP frames and the RLP frames is transmitted according to the sequence number order at transmitting station.

Further regarding the rejection of Claim 3, Seo discloses transmitting a NAK, a single NAK frame including each series numbers of any expired frames, at points in time when a timer for a NAK expires. The retransmission number of frames that the retransmission is requested is variable and it is indicated on the NAK frame. Seo is distinguished from the claims of the present application, at least because, according to Seo, the retransmission can be requested without waiting for a receipt of all of the frames by reducing a retransmission timer value at the receiving station, since a priority order is determined by the order of the sequence number of RLP frames

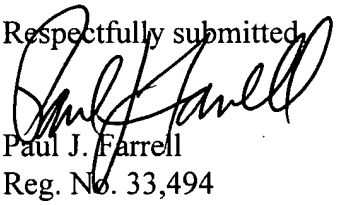
and the RLP frames are transmitted according to the sequence number order at transmitting station.

In conclusion, the claims of the present application recite the retransmission request queue that retransmission frames stored in the transmitting station are arranged in the order of their sequence numbers. The RLP frame of the claims of the present application are assigned to two sequence numbers, i.e. the frame sequence number and the data sequence number; the data sequence number is a sequence number for each data byte in the RLP frame. The retransmission frames are transmitted in the order of their frame sequence numbers, so that the stand-by time can be reduced at the RLP frame receiver.

Based on at least the foregoing argument, withdrawal of the rejections of Claims 1-3 is respectfully requested.

Independent Claims 1, 2 and 3 are believed to be in condition for allowance. Accordingly, all of the claims pending in the Application, namely, Claims 1, 2 and 3, are believed to be in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicant's attorney at the number given below.

Respectfully submitted,



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